

Wright (D. F.)

THE NOSEOLOGY AND METEOROLOGY

OF MEMPHIS, TENN.,

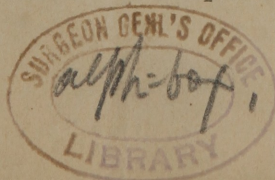
FOR THE FIRST SIX MONTHS OF THE YEAR 1857.

A report prepared for presentation to the Memphis Medical Society, by DANIEL F. WRIGHT, M. D., Secretary of the the Board of Health.

The following report, though prepared for the consideration of the Memphis Medical Society, was never read before that body, the July meeting having, from various causes, failed to take place. It is now offered to the readers of the Medical Recorder, of course, on the individual responsibility of the Reporter.

By a recent ordinance of the City Council of Memphis, Feb'y 17th, 1857, it was ordained that "the Secretary of the " Board of Health shall keep in a permanent form, for the use " of the City, a daily meteorological journal, after the plan re- " commended and adopted by the Smithsonian Institute." He is also appointed health officer of the city, and instructed to " inspect and report on all suspected causes of disease within " the corporate limits," and to keep the records of the city mortality. He is also constituted, *ex-officio*, medical attendant upon the prisoners in the city gaol. This last provision was ad led on April 14th, with some others regarding the salary, &c., attached to the office, and on April 17th, at a meeting of the Board of Health, held for that purpose, I was elected Secretary of the Board.

The extensive and varied duties imposed upon me, as above,



(Memphis, 1857.)

have necessarily thrown in my way a good deal of information bearing upon the sanitary condition of the city, and the causes affecting it, which I consider it my duty to make the property of the profession at large, and embrace the present as the most favorable opportunity of doing so. At first it was my intention to present the statistical tables alone, with which this report is accompanied, believing that the members of this Society were as competent as myself to make the inferences suggested by them, but as the Spring and early Summer of the present year have constituted a season unprecedented in several features, both meteorological and nosological, I came to the conclusion that these exceptional seasons furnished golden opportunities for reflection and research, which ought, on no consideration, to be wasted, and that if it were only for the purpose of eliciting discussion, it would be better for me to accompany my statistical report with some reflections on the etiology of the peculiar sanitary condition which has characterized our community. With this view I shall first call your attention to the meteorological peculiarities of the period over which our observations extended.

I must commence by stating, that in consequence of unexpected delay in receiving the instruments ordered for this purpose, the observations have been limited to ascertaining the temperature three times a day, and the rain falling in the intervals between the same points of time, the hours of observation being 7 A. M., 2 P. M. and 9 P. M. This, it must be admitted, gives but an imperfect view of the meteorological phenomena of the period, especially (since the peculiar dryness of the atmosphere has had an undoubted influence on prevalent diseases,) the dew-point and barometric pressure ought to have been ascertained. Practically, these defects may be supplied approximatively by inference from the observations actually made; thus, the co-existence of an unseasonably low temperature, with a very small amount of rain, prove conclusively that the dew-point must have been very low, though we cannot state numerically how low; in other words, it is shown that very little water is held in solution by the atmosphere, which must,

therefore, be very dry, and have a tendency to absorb moisture from all objects with which it is in contact. I will now call your attention to the tables herewith presented.

They commence with the 9th of January; during this month, however, the thermometer only was used. The temperature observed shows some cold weather, of considerable intensity, though not so permanently cold as the corresponding month of last year: the lowest point observed, is on the morning of the 18th, when the thermometer stood at 3° Fahrenheit, not rising higher than 8° during the day. I may here remark, that I am informed of more than one observer having reported the temperature of that morning at -3° ; or three degrees below the zero of Fahrenheit I can only say that the thermometer used by me was constructed for scientific purposes, by a first rate English maker, and that special precautions were adopted against any extraneous influences, and I do not think that my observations can be far from correct. Nothing further worthy of remark can be stated of this month, except that, considering the low temperature, a very small amount of snow, and scarcely any rain fell.

February is chiefly remarkable for the small amount of rain falling during what is generally a rainy month, the whole amount being very little over $2\frac{1}{2}$ inches; nevertheless, while this was the case, considerable fluctuations of temperature occurred, the temperature several times rising to Summer heat, and in the intervals sinking below the freezing point; thus, on the 5th, the three observations were respectively 62, 71, 63; on the 17th, 68, 75, 62, and on the 25th, 63, 75, 65; while the intervals between these periods are marked by considerable depressions, the average for the 9th—13th, being considerably below freezing point. The meteorological phenomena for March and April are still more remarkable. First, in regard to temperature, instead of the progressive elevation which normally marks the advance of spring, we have the average temperature of both these months below that of February. The averages standing as follows:

February, average temperature,.....	54 $\frac{1}{8}$
March, " " 	50 $\frac{1}{2}$
April, " " 	51 $\frac{3}{4}$

The dryness of the atmosphere was even greater in March than in February, the whole rain falling during that month being less than one inch—less, that is, than a single shower of any magnitude, and the three weeks from March 5th to March 26th, being entirely without rain, the temperature at the same time being several times below freezing point. In April there was a fair amount of rain, but the temperature still depressed, being, as before stated, rather more than three degrees lower than the average temperature of February. During May the average temperature was 67, still decidedly low for these latitudes; rain also less than customary in that month, being about 4 $\frac{3}{4}$ inches for the whole month. In June both these features, those of cold and dryness, are considerably moderated. The average temperature for June being 80 1-5 (still far from high for the season, however,) and the rain a little under three inches; this, it is to be observed, is less than the rain in May, but having taken place at a much higher temperature, and being distributed over the whole month in frequent though small showers, the necessary inference is that the dew-point must have been very near the temperature of the atmosphere. In other words, that the amount of water held in suspension in the atmosphere, must have approached the point of saturation.

In future reports of this character, I have every reason to hope that these matters will not be left to inference or conjecture, as I am every day expecting a supply of complete hygrometric apparatus, such as will determine with certainty the exact amount of moisture in the atmosphere; and before abandoning this part of my report, I will make a brief explanation of my mode of calculating the averages of temperature. In regular meteorological tables it is customary to give the highest temperature during the day, the lowest, and the *mean temperature*, this latter being just half way between the two extremes; this can only be accurately determined by means of a

maximum and minimum registering thermometer; for, without the extremes, of course the means cannot be determined; being unable, therefore, to give a correct *mean temperature*, I content myself with obtaining an *average temperature* for each month, by dividing the sum of all the observations by the number of observations, which, at least, enables me to make a comparative estimate of the relative temperature of the different months. Nor do I think that the time and labor which I have thus expended has been wasted, as much material for valuable reflection may be furnished even by very incomplete reports, provided it is known exactly how far they can be depended upon.

I proceed now with the mortuary portion of my report, and I think it will be evident, from the most cursory perusal of my tables, that the unusual features of the meteorological status have throughout been accompanied by an unusual nosological condition, in perfect harmony with them.

Thus, if we take the total results alone, we find the great staple of mortality (Table II,) to be furnished by the Zymotic eruptive fevers (scarlatina and measles) on the part of children, and Pneumonia, Consumption and other respiratory affections on that of adults. I say the general results at once show this much, but a more detailed examination of the progress of the season, together with the development of the diseases above specified, will go much further towards establishing an etiological connection between the two. Thus, the prevalence of the eruptive fevers, especially scarlatina, has evidently kept pace, both in its advance and retreat, with the low temperature and dryness of the atmosphere; it might, indeed, be stated almost in a mathematical formula that scarlatina varies inversely as the temperature and amount of rain.

Thus, during February, while the temperature was generally high for the season, this exantheme only had a rudimentary existence — the number of deaths from it being two. In March, when the cold and dryness of the atmosphere were at a maximum, the mortality from scarlatina was at a maximum also — 13 deaths being assigned to it. In April, when

the intensity of both these meteorological phenomena was abated, (though only slightly so) the mortality from this disease was 11; and in May and June, while this abatement gradually advanced, it was reduced to 8 and 5 respectively, receding gradually, with the gradual retrocession of its atmospheric exciting causes.

Parallel with this epidemic progress of scarlatina, may be stated that of measles; with this important variation, however, that in passing from March to April, while the mortality from scarlatina diminishes, that from measles increases. Indeed, measles being generally a milder disease than scarlatina, it is not surprising that, as the atmospheric influences abate, the milder exantheme should, in a proportionate degree, supplant the more virulent. During the latter part of this period, a considerable amount of whooping-cough prevailed; although, being generally a less fatal disorder than the other two, the mortality arising from it does not adequately represent its comparative prevalence. The months during which this disease prevailed, were those during which the former two were receding; namely, in April, May and June. Before abandoning, for a while, the account of these three, the special Zymotic affections of childhood, I will mention a curious feature, the result of my own observations, as well as of information received from my brother physicians, viz: The large number of complications of two, or even of all three, in one subject. Many physicians in Memphis related the occurrence of cases in which the roseolous eruption has been repeatedly succeeded by the uniform flush of scarlatina, and in some, while both these have been present during the eruptive stage, a tedious consecutive stage of respiratory lesions has been suddenly aggravated by the outbreak of whooping-cough.

The deaths by croup will conclude that part of the list which peculiarly relates to the mortality of children. Deaths from it are distributed over the whole six months pretty uniformly, except that the two months of its maximum prevalence are, as might be expected, January and March, the coldest and the driest month of the period.

Perhaps, however, to the list of diseases swelling the records of infant mortality, might be added most of those which appear under the head of convulsions. Of course, this is to be treated of as a symptom, not as a disease; and, as there are no diseases which are not, during childhood, liable to terminate this way, it is likely that if the true nosology of this portion of our table could be determined, it would go chiefly to swell those items of juvenile mortality which we have already discussed.

We now proceed to the diseases more connected with adult mortality; and all we have hitherto said about the atmospheric peculiarities of the season, will lead you to anticipate the recorded result that Consumption, Pneumonia, and other respiratory maladies, are the great agencies of mortality for this section of the population. Especially is a cold, dry season generally fatal to consumption; not, of course, that atmospheric causes could be supposed to *originate* the tubercular tiathesis, but all the local lesions which accelerate its fatal termination, are aggravated by the irritating effects of a dry, keen air, so as to precipitate the closing scene.

It will be seen, if we compare the two, that the increase and decrease of these adult respiratory affections keep pace remarkably with those of the Zymotic diseases of children. Thus, we have them compared in the following parallel statement:

	Jan.	Feb.	Mar.	Apr.	May	June
Zymotic disease of children.....	6	3	23	24	15	12
Respiratory disease of adults.....	12	11	18	14	14	6

The chief difference being that the respiratory diseases of adult life are earlier in attaining their *maximum* than the exanthemes of childhood—a result which might be anticipated when we reflect that it takes a longer period of incubation to produce the Zymosis, or general constitutional derangement on which the latter depend, than to establish the direct inflammatory action of the former.

With regard to the rest of the table, I know that some cases of Dropsy ought to be accredited to Scarlatina, as it was consecutive upon that disease, while the unusual number reported as dying of Erysipelas would seem to indicate that the skin has been a prominent sufferer in the attacks of the climatic influences, even in adults. Diarrhea and Dysentery are only introduced to show how trifling is their prevalence, compared with former times, when these intestinal disorders were, (to use the words of Prof. Shanks, written some years ago,) "the endemic scourge of the cities along the Mississippi.

From the third table, it may be gathered, as might be anticipated, from the prevalence of the exanthemes, that the infant mortality is above the average—being considerably over 58 per cent.; whereas, in a paper on infant mortality printed in the September number of the Medical Recorder for 1856, I showed that its customary average, both throughout the United States and in Memphis, when unaffected by disturbing causes, was about 37½.

Table IV will be deemed interesting to Memphis physicians, as it will recall to them many features of interest in their own practice for the last seven years. It contains a statement of the mortality during the first six months of every year from 1851 to 1857, inclusively. One point of interest will at once present itself, namely, the unusual distribution of mortality in the present year. In most of the preceding years will be seen that February, March and April are characterized by the lightest mortality, and June by the heaviest; whereas, in the present year, this is exactly reversed—a circumstance explained by the presence of Zymotic diseases during the spring, and the absence of the usual intestinal disorders during June. This latter peculiarity, by-the-by, may be also associated with the meteorological phenomena of the season, since the June of this year did not present a higher temperature than the May of most years, or even the April of many. One other curious result of examining table IV is, that the mortality of the first six months of 1857 is exactly the same as that of 1851, though our population has probably doubled within that time. It

must be remembered, however, that the mortality of '51 was largely increased by epidemic cholera, the prevalence of which, in the June of that year, was more than a set-off against the exanthematous fevers of the spring just past.

From table V it will be seen that last Spring was not entirely free from the visitations of still another exantheme, that of Small-pox, though by carefully removing all cases to the Hospital as soon as detected, and through the general prevalence of vaccination, the deaths from this disease did not amount to over forty, including those from varioloid. In justice to Dr. Jones, who kindly furnished me with this table, it should be observed that the percentage of deaths at this institution ($9\frac{1}{3}$) is very much smaller than has ever before been known.

Table VI gives the nosology of the College Dispensary for the same period, from which it will be observed, 606 cases of disease were, during the first six months of 1857, treated in that Institution.

And now, having detained the Society already longer than I have a right to claim their attention, I will only add, as candor requires, that the mortuary tables for the city are as correct as the sedulous exertions of the Secretary were able to make them; inasmuch, however, as the wise provisions of the ordinance, requiring a physician's certificate with every interment have been pertinaciously resisted by the Sextons, while the authorities of the city have shown but little zeal in enforcing them, it would be uncandid on my part to offer them as anything better than an approximate portraiture of the actual city mortality.

I now leave these tables for the attentive perusal of the Society, satisfied that the value of a record of this kind is amply sufficient to repay the labor of studying, and the still severer labor of preparing it. In regard to this latter duty, I should be very remiss if I were to fail to acknowledge the kind assistance rendered by Drs. Geo. F. Jones, T. B. Thrall and E. M. Willet, whose voluntary industry has at once much lightened my own labors, and enhanced the value of this report.

TABLE I.

Meteorological Statement for Memphis, Tennessee, during the first six months of the year 1857.

	January.			February.			RAIN.	March.			RAIN.
	TEMPERATURE.			TEMPERATURE.				TEMPERATURE.			
	7 A. M.	2 P. M.	9 P. M.	7 A. M.	2 P. M.	9 P. M.		7 A. M.	2 P. M.	9 P. M.	
1				38	48	38		42	55	46	
2				33	56	52		32	38	35	
3				54	65	58		33	55	42	
4				58	68	63		38	48	45	.688
5				62	71	63		42	49	36	.006
6				62	69	66		30	43	31	
7				63	61	43	1.274	24	35	33	
8				28	38	28		33	53	46	
9	25	33	31	24	40	28		38	45	29	
10	29	31	26	28	38	26		31	43	34	
11	21	31	22	23	44	26		31	42	28	
12	16	36	30	28	46	50		26	39	29	
13	23	30	30	48	62	54	.041	32	41	36	
14	30	43	34	56	68	58		40	54	43	
15	19	32	23	57	66	60		38	45	35	
16	29	33	34	60	68	63		40	63	50	
17	33	28	15	68	75	62		54	66	63	
18	3	8	7	65	74	60		50	56	45	
19	7	20	18	65	68	64		48	54	50	
20	20	34	34	64	58	52	.842	54	76	64	
21	22	20	15	45	48	44		56	66	59	
22	12	20	20	43	52	48		60	83	71	
23	18	20	18	46	68	60		68	81	68	
24	20	35	29	61	69	67		62	79	65	
25	17	40	37	63	75	65	.048	57	71	58	
26	36	55	58	64	71	58		54	72	63	.215
27	50	45	40	55	72	57		60	73	55	
28	38	43	37	50	56	47	.336	56	74	56	
29	31	45	38					58	68	58	
30	34	39	37					56	69	50	
31	37	48	37					54	77	66	.003
	Av. 29			Av. 54 $\frac{1}{8}$			2.541	Av. 50 $\frac{1}{2}$.912

TABLE I---Continued.

Meteorological Statement for Memphis, Tennessee, during the first six months of the year 1857.

April.			RAIN.	May.			RAIN	June.			RAIN	
TEMPERATURE.				TEMPERATURE.				TEMPERATURE				
	7 A. M.	2 P. M.	9 P. M.		7 A. M.	2 P. M.	9 P. M.		7 A. M.	2 P. M.	9 P. M.	
1	56	56	52	.535	68	78	66	.121	63	78	66	
2	38	53	42		63	68	58		62	78	63	
3	54	62	51		53	57	45	.298	65	85	74	
4	52	68	62	.131	52	68	55	.504	68	87	78	
5	62	48	36	2.584	53	72	65		63	72	66	.012
6	31	41	34		62	78	64		60	76	70	.766
7	40	70	62	.381	59	75	62		76	89	81	.530
8	56	45	43		64	78	72		80	91	80	.264
9	42	54	52	.036	70	85	69		78	87	80	
10	54	65	50		72	85	75		75	87	76	
11	48	52	41		58	75	68		70	84	72	
12	45	55	43		60	83	75	.008	76	92	80	
13	45	58	40		76	84	76	.846	78	94	85	
14	45	51	41	.097	65	86	78		84	92	80	.168
15	46	57	46	.024	63	81	64		80	92	82	.015
16	51	73	69		58	69	60		76	89	77	.005
17	46	42	35	1.587	53	68	52	.519	72	84	72	trace
18	40	54	43		47	50	51	.501	65	76	65	
19	40	56	45		47	63	52		69	78	72	
20	48	71	59		56	71	53		72	87	82	
21	56	57	45		55	71	58		68	83	71	
22	46	55	48		58	81	67		66	84	72	
23	45	65	49		60	82	65		70	86	73	
24	52	68	56		67	85	72		78	88	76	
25	56	70	62		67	73	67	.485	80	81	77	.415
26	60	57	51	.537	65	78	63	.091	74	84	80	.336
27	50	55	56	.005	62	86	71		75	83	77	.378
28	56	68	64		65	80	63		80	91	77	
29	63	76	62		67	84	66		78	87	75	
30	59	63	65	2.812	76	63	60	1.137	73	78	72	
31					65	71	64	.270				.074
Av. 51 $\frac{3}{4}$			8.729	Av. 67			4.780	Av. 80 1-5			2.963	

TABLE II.

Mortuary Report for Memphis, Tennessee, for the first six months of the year 1857, giving a comparative statement of the most prominent diseases of the season.

	Jan....	Feb...	Mar...	April.	May...	June..	Total.
Scarlatina.....	3	2	13	11	8	5	42
Measles.....	1	0	7	11	3	4	26
Whooping Cough.....	0	0	1	2	3	2	8
Croup.....	2	1	2	0	1	1	7
Pneumonia.....	3	6	10	4	8	3	34
Consumption	6	5	6	9	6	3	35
Other Respiratory Diseases....	3	0	2	1	0	0	6
Dropsy	1	1	2	0	0	0	4
Erysipelas.....	0	1	2	1	1	1	6
Diarrhea.....	0	1	0	2	3	4	10
Dysentery.....	1	0	0	1	0	0	2
Convulsions.....	6	6	7	5	3	0	27
Rheumatism.....	1	1	1	0	0	0	3
Other Diseases.....	18	15	17	27	28	22	127
	45	39	70	74	64	45	337

TABLE III.

Comparative statement of Deaths over and under five years of age, during the same period.

	Over 5.	Under 5.	Unknown.	Total.
January.....	28	14	3	45
February.....	18	19	2	39
March.....	42	28	0	70
April.....	43	31	0	74
May.....	39	21	4	64
June.....	22	22	1	45
	—	—	—	—
	192	135	10	337

58.77 per cent.

TABLE IV.

Comparative Statement of the Mortality of Memphis, during the first Six Months of 1851-1857.

	1851.	1852.	1853.	1854.	1855.	1856.	1857
January.....	22	38	53	34	36	29	45
February	26	32	27	27	34	33	39
March.....	37	30	36	28	46	23	70
April.....	37	35	25	42	28	35	74
May	70	55	36	43	64	42	64
June.....	145	119	33	74	67	68	45
	—	—	—	—	—	—	—
	337	309	210	248	275	230	337

TABLE V.

Statement of Diseases treated at the Memphis Hospital during the first six months of 1857.

Rheumatism.....	31	Icterus	4
Pneumonia.....	54	Erysipelas	5
Fractures.....	6	Chilblain	10
Amputations	4	Laryngitis	1
Ulcers	29	Insanity	6
Prolapsus ani.....	2	Mania a Potu.....	8
Tinea Capitis.....	4	Amaurosis	8
Intermittent Fever.....	32	Remittent Fever.....	1
Wounds	26	Scarlatina.....	3
Syphilis	26	Measles	7
Gonorrhea	5	Variola	36
Schirrhus Testis.....	2	Varioloid.....	4
Ulcer Stomach.....	5	Anasarca	2
Hydro-thorax	1	Diarrhea.....	6
Abscess	1	Burns	1
Dysentery	3	Phthisis Pulmonalis.....	6
Tonsillitis	8	Paralysis	1
Syphilitic Ophthalmia.....	2	Fistula in ano.....	1
Gonorrheal “	3	Cataract	1
Lumbar Abscess.....	2	Parturition.....	4
Hernia	2	Coxalgia.....	1
Compression of Brain	2		
Total of cases.....			366
Number of deaths.....			34
Per centage of deaths.....			9 $\frac{1}{3}$ very nearly.

GEO. F. JONES,
Hospital Physician.

TABLE VI.

Statement of all the Diseases treated in the Dispensary of the Medical College during the first six months of 1857.

Intermittent Fever.....	376	Hepatitis	1
Synovitis	5	Porridge.....	4
Catarrh.....	3	Iritis	1
Anasarca	3	Cachexia	7
Fracture	5	Cold.....	7
Paralysis	1	Diarrhea.....	18
Gastrodynia.....	1	Burn	6
Rheumatism	11	Scarlatina	1
Dyspepsia	1	Constipation.....	7
Ophthalmia.....	5	Neuralgia.....	2
Ulcer of the leg.....	12	Cutaneous Eruption.....	1
Bronchitis	3	Renal disorder.....	1
Scabies.....	1	Otitis	1
Tonsillitis	5	Typhoid Fever.....	1
Pleurisy	6	Sprain	4
Debility.....	3	Dysuria	2
Ulcer	6	Erysipelas.....	4
Rem. Fever.....	4	Epistaxis	1
Injuries	5	Pneumonia.....	1
Cephalalgia	1	Coxalgia.....	2
Worms	2	Stomatitis.....	3
Influenza.....	3	Scrofula.....	2
Catarrhal Fever.....	3	Measles.....	4
Cough.....	26	Dysentery	1
Laryngitis	1	Orchitis	1
Ptyalism	1	Syphilis.....	5
Chilblains.....	1	Convulsions.....	1
Bone Felon.....	2	Mammary Abscess.....	1
Splenitis	3	Hemorrhoids	1
Tinea	2	Fistula.....	1
Conjunctivitis.....	6	Incised wound.....	1
Contusion	5		
Gastritis.....	1	Total	606

T. B. THRALL,
Attending Physician for June.

Appendix to the Report.—On the Pathology of the Zymotic Fevers.

In the above report I have spoken of the exanthematous disorders so prevalent last spring, in a manner which, if not altogether novel, is yet sufficiently unusual to excite some discussion. I have spoken of them as liable to originate in certain Thermometric and Hygrometric conditions of the atmosphere. This idea in reference to diseases generally considered contagious, or, at least, infectious in their character, will naturally be deemed to demand some explanation; so, at least, even if I should fail to make out my point, I shall be expected to state precisely what is my position in reference to these diseases. To commence, then, I think it may be easily seen that, whatever may be people's views with regard to their contagious or infectious character, neither is inconsistent with the possibility of an atmospheric origin for their epidemic prevalence. I shall endeavor to show, in other words, that an atmospheric cause may, without contradiction, be supposed to produce disease, which, when produced, may become communicable, either by infection or contagion.

Is not, then, a dry, cold condition of the atmosphere at any rate, calculated to predispose the skin to a morbid condition? The commonest experience shows that under such circumstances the skin does suffer—chapped hands and lips, chilblains, etc., are familiar evidences of this, but the question arises whether the prolonged effect of these influences on the skin may not produce morbid conditions affecting the system generally? To estimate this question aright, let us consider some of the functions of the cutaneous surface. In treating of the skin as a secreting organ, physiologists have, I think, too much limited their attention to its secretion by the sudoriferous and sebaceous glands. Important as these may be, it seems to me that they are far subordinate to that great system of excretion that depends upon its constant epithelial desquamation: of all products in the human body the solid substance excreted by the exfoliation of the epidermis abounds most in nitrogen, and

seems, according to the best analyses, to contain ammonia ready formed in considerable quantities. This being the case, is it not evident that where this process is going on with activity a larger amount of azotised excretion must be effected this way than by all other emunctories put together—the kidneys not excepted? Now there are many evidences that in early spring and summer there is, under ordinary circumstances, an increased activity given to this process. Cutaneous diseases are much more common at this season, the eruptive fevers now under consideration are much more prevalent at this season, than any other, and the analogy of the whole animal creation shows an increased activity in the cutaneous system of nutrition and disintegration—thus we have beasts throwing off their winter coat, as it is called, and the newer and more perfect fur or hair rapidly taking its place, birds moulting and serpents casting their skin, &c.—and can it be doubted that the result of this is the throwing off of various materials which, during the suspension of this function in winter, have accumulated, and would otherwise act as a source of disease? Indeed, the very act of throwing it off seems to constitute a sort of disease, for birds when they moult, horses when they change their coat, are, as is well known, out of condition—the serpent retires to his den to change his skin, and goes through the process more dead than alive. May not these changes be considered as a sort of normal exanthematous fever, from which the animal comes forth with his winter constitution depurated and invigorated for the procreative season? Now, a well known phenomenon in popular pathology is that of spring-sickness; it is looked upon as a thing to be expected that a certain amount of mild indisposition shall take place at this season—indisposition which is expected to yield to the mild medication of herb teas, etc., and probably does not need even this: these popular impressions, however mixed up with error, always contain some truth at the bottom, and the man of true science, though he may scrutinize them strictly, is always too wise to pass them over. If these season sicknesses are less noticed at the present day than in old times, I think

that it would still be unphilosophical to reject them as exploded chimeras; they are probably less distinctly marked than formerly, from the fact that advancing civilization, with its increased means in the way of clothing, and firing, and well constructed dwellings for moderating the extremes of temperature, has really, to a great extent, equalized the seasons and so partially obliterated those periodic revolutions in the animal economy which have given their pathological characteristics to the different seasons. Still much remains to show that the spring especially is a period of considerable constitutional changes in man as well as the lower animals.

And may not the truth at the bottom of all these general facts and general impressions be, that during the spring certain accumulated materials have to be thrown off which have been retained in the blood, through the partial suspension of this epithelial excretion during the winter? To estimate the probability of this, let us consider rather more in detail the effect of cold weather upon this function. Take, for instance, the simple and common phenomenon of chapped hands, already alluded to. Here, at first sight, the phenomena would seem to suggest rather an increased than a diminished epithelial action; the corium becomes bare, the epidermis roughening and becoming split into chinks. But a slight consideration will serve to show that it is not so much the more rapid disintegration of old tissue which is at work, as the less active development of new. Thus familiar observation shows that where the nutritive forces of the skin are unimpaired, any cause which rapidly removes the disintegrated epidermis, (friction, for instance,) tends, by stimulating the nutritive process, to increase rather than diminish the substance and consistency of that membrane—when, therefore, cold effects an exposure of the *corium* or *cutis vera* it is not by excess of what is removed from above, but through defect of what is supplied from below—in short, from a defective nutrition of the skin; and why this should result from cold is plain. The contractile muscle cells, both in the substance of the skin itself, and those entering into the structure of its arterioles, are caused to contract, cold being their most energetic irritant, and thus the supply of

blood diminished, which alone is sufficient to account for a diminution in both its nutritive and excretive functions, growth, that is, and its exfoliation of waste substance. But now, if the plastic material prepared in the system for the nutrition of so large a portion of it as the cutaneous expanse be for several months of the year, to a great extent prevented from subserving that purpose, then, what becomes of this unappropriated material? Here the aphorism of Treviranus seems to have much force, that "every organ and tissue of the body in reference to its nutrition, serves as an excretive organ to the rest of the system." In the rapid changes which the skin goes through in its normal condition, it is difficult to say which is the more prominent, the function of nutrition or that of disintegration, the two processes being so mutually dependent on each other; and can any one suppose that when so rapid a medium of excretion is from any cause retarded or suppressed, when so large an amount of material, which being adapted for skin-nutrition, is so far unadapted to the nutrition of any other tissue, is retained in the system, that then no disturbance shall take place in the equilibrium of the organic forces?

Let it even be supposed (which, doubtless, does take place to some extent,) that the matter thus accumulating is disposed of by some other medium of excretion, the secretive functions of the kidney, for instance. Yet, even then, it can scarcely be supposed that no pathological result ensues. If, even, we could suppose that the excretion could be performed as perfectly when one organ alone performs its own share of the work, and that of another too, still the very fact of the additional calls upon the vicarious organ, would lead us to anticipate, after awhile, derangements in its functions from an excessive demand upon its exertions, and then of course the evil would be redoubled.

And now we are in a position to appreciate the probable effects of just such a Spring as we have been passing through.

As a general thing, the bland and genial warmth of advancing Spring, gradual in its progress and tempered with a grateful moisture, is exactly the condition calculated to encourage

the resumption of the cutaneous functions, at a season when their suspension could not be continued without evil resulting, the gradual elevation of temperature producing a gradual dilatation of the cutaneous capillary system, and thereby promoting a gradually increased nutrition, while the moisture of the atmosphere prevents the exhalations of the sudorific glands from being carried off too rapidly, and allows them to settle on the cutaneous surface sufficiently to keep it in that state of moisture which is most favorable to the exuviation of the waste products of this nutrition. But instead of the growing warmth and genial showers of our customary Spring weather, we have, as above shown, had everything reversed. A few days of unseasonably warm weather in February were succeeded by a wintry coldness and arid drought throughout the entire months of March, and April. The results naturally to be expected from these circumstances would be, first of all, that the circulation in the skin would be resumed too suddenly, and in such a manner as to favor inflammation rather than increased nutrition; and, secondly, that it would again be cut off entirely—a second winter, as it were, intervening before the effects of the first were eliminated from the system. Thus, not only is there left in the blood and the system at large, the accumulated material resulting from the suppression of epithelial excretion, but a fresh supply added on account of this second suppression, while the skin itself is already in excited or irritated state, from the incipient resumption of its functions early in February being suddenly arrested by the ensuing cold. Can it be doubted that this abnormal accumulation must be now attended by disease? Any accumulated animal matter in the blood, not normally belonging to its constitution, must eventually, if not excreted, undergo decomposition there, so as to constitute what the modern humoral pathology delights in designating a *blood poison*. Moreover, as the materials of this poison were originally elaborated for the skin, and failed to be so appropriated through a defect of its nutritibility, it is obvious that the skin is their appropriate excreting organ, that their special vital affinity is for that membrane. Here,

then, we have a morbid poison seeking elimination through a definite organism, that of the skin, while that structure is in a state of impaired functional activity; and is not the result, necessarily to be anticipated, a morbid excitement of the epithelial process: in other words, a cutaneous eruption accompanied by such constitutional or febrile derangement as is to be expected from the presence of an accumulated and imperfectly eliminated poison in the blood? In other words, have we not shown that all the circumstances with which our population has been surrounded this Spring have been favorable to the development of fevers, attended with cutaneous eruptions—the regular exanthematous fevers—that is to say, such as scarlet fever, small pox and measles? And if we find that, exactly those diseases have prevailed which the considerations we have presented represent as due to the antecedents, then is there not a strong probability that the alleged antecedents have really stood to the results in the relation of cause and effect? I know that the great obstacle to the reception of my conclusions will be the *specific* character of these diseases, as shown by their communicability by infection and contagion, and by their generally securing persons once affected by them from a recurrence of the same disease.

Fortunately it is not necessary for me to enter the intricate field of controversy, to which the mention of these subjects generally leads. My own hypothesis implies the existence of a blood poison, consisting of organic matter undergoing decomposition as the result of atmospheric influences, which I suppose to be the original morbid cause; and, whether it be the theory of infection or contagion, or epidemic diathesis, which my readers may hold and which I, at present, meddle not with, they are at liberty to suppose that this poison in a solid or fluid or gaseous form, or the catalytic process or decomposing force which it gives origin to is communicable, or finally, that the same causes, acting upon different individuals, produce the same effects. My hypothesis is altogether independent of all these opinions and of the controversies to which they have given rise.

Not that I am without my opinions upon those subjects; and I will here mention that the aspect which these diseases have assumed in Memphis this Spring is well calculated to modify extreme opinions regarding their specific character. The blending of the types of the several exanthemes, the successive development of their characteristics in the same individual during the same attack, the simultaneous occurrence of the different exanthemes in the same family, seem to point significantly to a generic cause, producing specific symptoms, varying in their character according to the constitutional condition of the subject in which its effects are developed. At any rate, whatever may be the difficulties of the atmospheric hypothesis (and I am not insensible of their cogency,) an insuperable difficulty exists, on the other hand, with those who hold for specific infection as the only origin for these exanthemes, the question, namely, how did the first case of scarlatina or small-pox or measles originate? I am aware, too, that this mode of dealing with the subject is calculated to unsettle pathological views relating to other specific diseases, Syphilis for instance; and I am prepared for the inference as not indefensible that this scourge of humanity may also have arisen, and may still continue to arise, from a specific and communicable poison indeed, but from one which may be developed without specific infection from the vitiated secretions which arise from abnormally continued irritation of the reproductive organs, accompanied with a want of personal cleanliness, and if this is contested, the question might again be put, "how did the first case of Syphilis arise?" as was asked before regarding the exanthemes; and to show what a difficulty this question really is, in the way of candid believers in its exclusive origin by specific infection, we have only to refer to the portentous theories of its original commencement which some of them have been led to adopt: let one be enough, the revival namely of Van Helmont's theory of its being derived from unnatural intercourse with the lower animals—vide Acton, p. 241. Am. ed.

But this is not a treatise on Syphilis. I have only mentioned this disease to show that I am not at present unprepared

for the extension of my hypothesis to other diseases besides the exanthemes of which I have here been taking especial cognizance.

D. F. W.

